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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,021	07/09/2003	Jri Lee	G&C 30448.116-US-U1	1118

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EXAMINER
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WONG, LINDA

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/616,021

Applicant(s)

LEE ET AL.

Examiner

Linda Wong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 11-16 is/are rejected.
- 7) ☒ Claim(s) 7,8,9,10,17,18,19,20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a) because Fig. 1 fails to show a plurality of signals outputted from the phase detector, the date output signals, as being converted by the voltage-to-current converter as described in the specification and in claims 1 and 11. Based on the description on page 2, paragraph [0039], diagram 3A and claims 1 and 11, the voltage-to-current converter should convert all 4 outputs from the phase detector. In Fig. 1, the voltage-to-current converter shown has one input from the phase detector. This does not match the specification nor claims 1 and 11.

Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

2. The disclosure is objected to because on page 2, paragraph [0025], line 6, discloses a “control current” outputted from the voltage-to-current converter. On the same page and paragraph, on line 7, the specification discloses a loop filter modifies a “control voltage”. Based on Fig. 1A, the output of the voltage-to-current converter is inputted into the loop filter, thus if the voltage-to-current converter outputs a “control current”, the loop filter should modify a “control current” as opposed to a “control voltage”. It is suggested by the examiner that the “control voltage” stated in line 7 be changes accordingly.

***Claim Objections***

3. **Claims 1 and 11**, are objected to because in paragraph c, line 3 and paragraph d, line 1, recite the limitation "control voltage", outputted by the Voltage-to-Current (V/I) Converter, is modified by the loop filter. In paragraph c, line 3, both claims recite a V/I Converter that outputs a “control current”, as opposed to a “control voltage”. Based on the object of the specification, changes to claims 1 and 11 should be modified accordingly.

***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1, 2, 3, 4, 5, 6, 11, 12, 13, 14, 15, and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang (US Patent No.: 6442225 B1).

- a. **Claims 1 and 11**, Huang discloses a multi-phase voltage controlled oscillator (VCO) accepting a control signal and generates a plurality of multi-phase clock signals for detecting the transition edge of the data signal (Fig. 5, label 24 and Abstract, lines 4-7), a phase detector comparing the data signal and clock signals, outputting a plurality of data signals and detecting the transition edge of the data (clock) signal (Fig. 5, label 24 and Col. 1, lines 26-39), a V/I that converter, in the form of a charge pump converts the output from a phase detector and outputs a control current (Fig. 5, labels 22 and Vd) and a loop filter outputting a control signal to the voltage controlled oscillator (Fig. 5, label Vd and 23).
- b. **Claims 2 and 12**, Huang discloses a circuit taking in 1 data signal, retimes and demultiplexes the data signal to a plurality of output data signals. (Fig. 5, label 21, CKN – CK1)
- c. **Claims 3 and 13**, Huang discloses an N input phase detector and VCO, which can function as a half-quadrature phase detector. The phase detector disclosed by Huang also detects the edges of the inputted data signal and determines whether the clock signal is early or late. (Col. 1, lines 26-39)
- d. **Claims 4 and 14**, Huang discloses a phase detector comprised of a plurality of flip-flops to compare the data signal and the plurality of clock signals. (Fig. 7, labels data, 212, CK1 – CKN)
- e. **Claims 5 and 15**, Huang discloses a phase detector that compares every two adjacent samples stored by two adjacent flip-flops by means of an XOR gate to

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detect the edge of the inputted data signal. (Fig. 7, labels data, 212, U1, U2, and 213)

- f. **Claims 6 and 16**, Huang discloses a phase detector that uses the leading and lagging edges of the clock signal to compare with the input data signal. (Col. 1, lines 26-39)

***Allowable Subject Matter***

5. **Claims 7, 8, 9, 10, 17, 18, 19, and 20** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Linda Wong whose telephone number is 571-272-6044. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571) 272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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